

## REMARKS

Claims 10-20 remain pending. In an effort to advance prosecution, claims 1-9 have been cancelled without prejudice or disclaimer. The prior art rejections of claims 1-9 are therefore now moot.

### **I. The Finality of the Office Action is Improper**

Applicants respectfully request withdrawal of the finality of the July 10, 2006 Office Action. The Office Action asserts that Applicants' amendment necessitated the new grounds of rejection in the Office Action. However, not all new grounds of rejection were necessitated by amendment. In particular, although claims 1-9 were amended, claims 10-20 were not amended (indeed, claims 10-20 still remain original claims). Yet the July 10, 2006 Office Action rejected claims 10-20 over a newly cited reference, Odom et al. U.S. Patent 6,495,837. M.P.E.P. § 706.07(a) specifically addresses this situation – and explains that a final rejection is not proper:

[A] second or any subsequent action on the merits in any application or patent undergoing reexamination proceedings will not be made final if it includes a rejection, on newly cited art, other than information submitted in an information disclosure statement filed under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17 (p), of any claim not amended by applicant or patent owner in spite of the fact that other claims may have been amended to require newly cited art.

Because the July 10, 2006 Office Action contained at least one new ground of rejection that was not necessitated by amendment, the finality of the Action was improper under M.P.E.P. § 706.07(a). Applicants respectfully request that the finality of the Office Action be withdrawn.

## **II. The Prior Art Rejections Are Improper At Least Because the Final Office Action Continues to Rely on Non-Prior Art Portions of Grodzins**

Claims 10-14 and 16-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Craig et al. U.S. Patent 6,580,079 (“Craig”) and Odom et al. U.S. Patent 6,495,837 (“Odom ‘837”), and further in view of Grodzins U.S. 2005/0023479 (“Grodzins”). Claim 15 stands rejected under 35 U.S.C. § 103(c) as being unpatentable over Craig and Odom ‘837, and further in view of Koechner U.S. Patent 4,942,302 (“Koechner”). Each of these rejections is respectfully traversed.

Craig discloses a method of measuring a hydrogen-bearing constituent in a material. A plurality of radiation detectors 400 are spaced within a moderator 410 formed of graphite or a hydrogenous material such as water or polyethylene. The radiation detectors 400 may be formed as optical fibers arranged in layers or alternatively as ribbon or sheet. The scintillator material may be organic, inorganic, lithium silicate glass, or plastic (col. 5, lines 65 to col. 6, line 4).

The Final Office Action concedes that Craig does not describe a neutron detector comprising a thermal neutron sensitive scintillator film interleaved with a hydrogenous light guide-thermalizing media, as claimed in independent claims 10 and 18. Odom ‘837 is cited as describing an optically transparent hydrogenous material that provides an optical path for scintillation photons to the photocathode of an optically coupled photomultiplier tube. The Final Office Action asserts that, in view of Odom ‘837, it would have been obvious to utilize the thermalizing media of Craig as a light guide.

The Final Office Action recognizes that neither Craig nor Odom ‘837 discloses a plurality of  $^6\text{Li}$ -ZnS films optically coupled to a light guide-thermalizing media comprising a plurality of acrylic layers, as required by independent claims 10 and 18. The Final Office Action

cites Grodzins as disclosing in Figs. 3, 4, and 7 a thermal neutron sensitive scintillator film interleaved with a hydrogenous thermalizing media. This disclosure, however, is not prior art to Applicants.

The Grodzins application was filed June 4, 2004, after the April 13, 2004 filing date of the subject application. Grodzins claims priority to provisional application 60/476,101, filed June 5, 2003. None of Figs. 3, 4, and 7, on which the Final Office Action relies, was disclosed in the '101 provisional application. The § 102(e) prior art date for this subject matter is June 4, 2004 – not June 5, 2003. Applicants pointed this fact out in their previous response. Yet the Final Office Action did not address Applicants' argument and, incredulously, continues to rely on the non-prior art portions of Grodzins.

The Grodzins '101 provisional application discloses LiF/ZnS (not  $^6\text{Li}$ -ZnS as claimed) as a material for a thermal neutron sensitive scintillator film. Significantly, the Grodzins '101 provisional does not describe or suggest a plurality of films optically coupled to a plurality of layers of a light guide-thermalizing media, as required by independent claims 10 and 18. In any event, even if the disclosures were somehow combined, the claimed invention would not result because none of the documents describes or suggests a neutron detector having a plurality of  $^6\text{Li}$ -ZnS layers as claimed in claims 10 and 18.

None of the cited prior art documents, whether taken alone or in combination, discloses or suggests a neutron detector having a plurality of  $^6\text{Li}$ -ZnS films optically coupled to a light guide-thermalizing media comprising a plurality of acrylic layers, as set forth in independent claims 10 and 18.

Independent claim 18 requires a thermal neutron sensing scintillator comprising at least four  $^6\text{Li}$ -ZnS films interleaved with and optically coupled to a light guide-thermalizing media

comprising at least five acrylic layers, and a reflecting surface substantially enveloping the interleaved layers, wherein the reflecting surface comprises a tapered portion extending from an end of said interleaved layers for guiding light to a narrowed section. None of the cited prior art documents shows a neutron detector having these particular features. Independent claim 18 thus even further distinguishes the cited prior art documents.

Dependent claims 11-14, 16, 17, 19, and 20 are allowable for at least the same reasons applicable to independent claims 10 and 18. Reconsideration and withdrawal of the § 103 rejection over Craig, Odom '837, and Grodzins are respectfully requested.

Koechner is cited as describing a wavelength shifter in conjunction with a scintillator. Koechner fails to disclose or suggest a neutron detector having the particular features recited in independent claim 10. Dependent claim 15 is allowable for at least the same reasons applicable to claim 10. Reconsideration and withdrawal of the rejection over Craig, Odom '837, and Koechner are respectfully requested.

In view of the foregoing, favorable reconsideration and allowance of the subject application are respectfully requested. The Examiner is invited to telephone the undersigned at the number listed below if doing so would be helpful to resolve any outstanding issues.

Respectfully submitted,

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